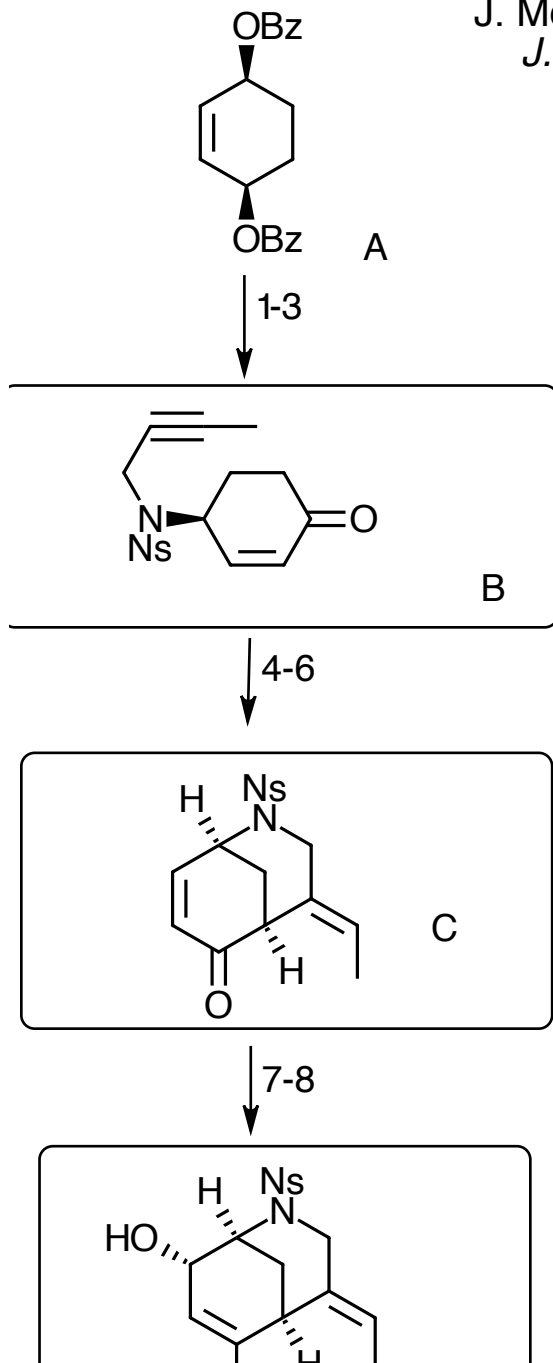


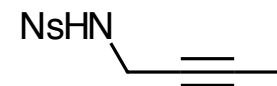
Synthesis Challenge # 43  
 Enantioselective Total Syntheses of Akuammiline Alkaloids  
 (+)-Strictamine, (-)-2(S)-Cathafoline, and (-)-Aspidophylline A,  
 J. Moreno, E. Picazo, L. A. Morrill, J. M. Smith, N. K. Garg,  
*J. Am. Chem. Soc.* **2016**, DOI: 10.1021/jacs.5b12880  
 04.02.2016



1) I,  $[\text{PdCl}(\text{C}_3\text{H}_5)_2]$ , Trost ligand  
 $\text{Cs}_2\text{CO}_3$ ,  $\text{CH}_2\text{Cl}_2$   
 2)  $\text{LiOH} \cdot \text{H}_2\text{O}$ , MeOH  
 3) PCC,  $\text{CH}_2\text{Cl}_2$

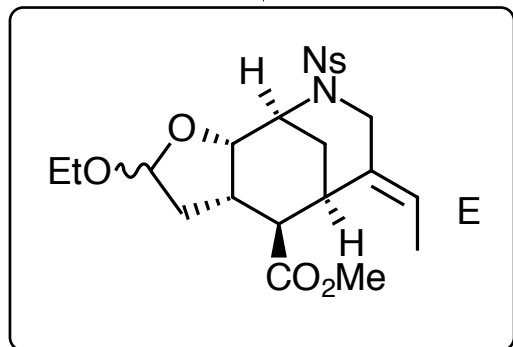
4) TBDPSOTf, 2,6-lutidine  
 5)  $\text{Au}(\text{PMe}_3)\text{Cl}$ , AgOTf  
 6) *p*-TsOH  $\cdot$  H<sub>2</sub>O

7)  $\text{NaBO}_3 \cdot 4\text{H}_2\text{O}$ , THF, H<sub>2</sub>O, 65°C  
 8)  $\text{Cl}(\text{Ph})_3\text{P}-\text{CH}_2\text{OMe}$ , KO<sup>t</sup>Bu, THF

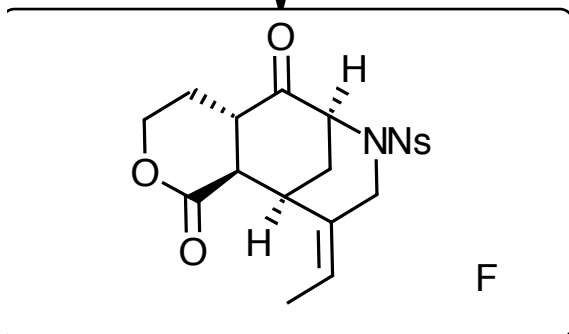


I

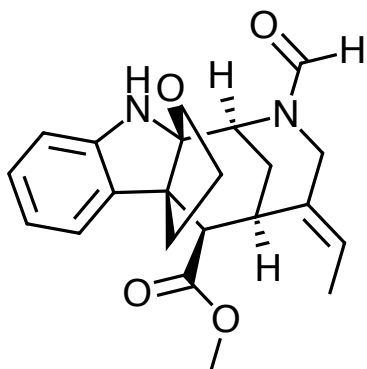
9-11



12-15



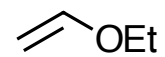
16-18



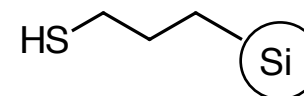
- 9) NIS, K<sub>2</sub>CO<sub>3</sub>, MeOH  
 10) II, NIS, CH<sub>2</sub>Cl<sub>2</sub>, -20°C  
 11) *n*Bu<sub>3</sub>SnH, AIBN, 75°C, toluene

- 12) AcOH, H<sub>2</sub>O, THF, 75°C  
 13) NaBH<sub>4</sub>, MeOH, 0°C  
 14) *p*TsOH, benzene, 80°C  
 15) Dess-Martin, CH<sub>2</sub>Cl<sub>2</sub>, 40°C

- 16) PhNHNH<sub>2</sub>, TFA, 40°C, 1,2-dichloroethane, then K<sub>2</sub>CO<sub>3</sub>, MeOH, 65°C  
 17) III, Cs<sub>2</sub>CO<sub>3</sub>, MeCN, 65°C  
 18) formic acid, EDAC, DMAP, CH<sub>2</sub>Cl<sub>2</sub>



II



III

Please provide a nice 3D drawing of the final product!